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BULLETIN OF THE

MISSOURI STATE NORMAL SCHOOL

THIRD DISTRICT

A STATE COLLEGE

CAPE GIRARDEAU, MISSOURI

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The Use of the Score Card in Rural Schools

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The Use of the Score Card In Rural Schools

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The Use of the Score Card in Rural Schools.

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More Applied Agriculture Needed in Our Schools.

In many parts of our state progressive citizens are trying to stimulate men and boys to produce better corn by offering premiums. An extensive observation of the corn exhibited at these contests reveals the fact that more people can raise good corn than know corn well enough to select a good sample. This is true because variety characteristics are not well known; and because ideal standards are not well understood. Many people have good ideas of what a good ear of corn should be, but these ideas are confined to a few points to the oversight of others. The result in selection is that samples lack uniformity in one or more of the essential outstanding points.

The greater amount of instruction in corn judging is being dispensed by institute lecturers and thru short courses in colleges and schools of agriculture. The few who have been able to take advantage of these opportunities are the ones who are winning the most of the prizes; the many look on and wonder why. A progressive citizenship is doing its duty; are progressive teachers doing theirs? May not instruction in this very important branch of agriculture be brought home to every farmer's son in his own district

The teaching of agriculture is now demanded in every public school. Teaching regularly from text book, having our pupils study by paragraph, and learn by recitation—teaching about things instead of teaching the thing, is by far the too common method by which we are fulfilling our obligation to the law. The purpose of this bulletin is to give definite instruction in the art of teaching corn, horse and cattle judging. The methods recommended are essentially those used by all schools of agriculture. They have been simplified somewhat for the grade of pupils to be taught, and modified to fit the peculiar conditions of Southeast Missouri. It is not intended that the teacher shall follow them slavishly or copy them blindly. As the details have been compiled and modified from forms used in many states to meet the requirements of a particular section, so they must again be modified to suit varying conditions. It is earnestly hoped that

a careful perusal of the following pages will help the progressive teacher to become proficient in teaching the three kinds of judging outlined.

Rural School Agriculture in General.

Agriculture is pre-eminently a concrete study. Upon this basis it furnishes its greatest value to the rural school curriculum. No other subject can be substituted for it. It links home life with school life; it points out the utility value of arithmetic, geography, and pyhsiology; it supplements reading, history, language and spelling; it adds the touch of life. Thru this study pupils see the "sense" in all others.

Reading receives thru agriculture a more extended field of subject matter—interesting because of the pupil's partial acquaintance with it at home. Language and spelling gain an ally in the necessity of a well kept note book. History may be called upon to explain why, for instance, the best of American horses developed in Kentucky and Virginia; why the Cydesdale is most popular in Canada; why the saddle horse reached its highest development in the United States; why the fine wool breeds of sheep originated in Spain; why nearly all the beef and meat breeds of live stock had their origin in England, while the dairy breeds of cattle had their origin in Holland and the islands of the southern North Sea. So agriculture should constantly remind the pupil that along with the development of animals and seeds and plants and all things useful to mankind came the development of man himself, which is the essence of history.

But it is with arithmetic, geography, and physiology that agriculture bears closest relationship. It has long been known that the country boy cares more for his 'rithmetic than for his other studies, but we have only recently comprehended the significance of the reason why. The farmer boy can see how arithmetic will be his friend in measuring hay, or selling cattle, or laying off land, or calculating interest. But he seldom sees as his teacher should, that he cou'd profitably carry his calculations beyond mere bushels or rods or dollars. He should translate his bushel yields into per cent yields, his rods and acres into fractional parts of the whole farm, his dollars should show relation to capital stock invested. **We must make our arithmetic more agricultural and our agriculture more arithmetical.**

Geography, physiology and agriculture are rich in parallels. The soil and the forces that made it, are making it and unmaking it; commercial geography and manufacture with their interrelationship with the farm; plant life, one branch leading into

textile industries, forestry, and lumbering, another into food production; animal life, one branch leading to the manufacture of animal products, another to meat supply; food, its preparation, classification, relative values, digestion, assimilation, so closely related are all these topics for study that they may very conveniently be taught as one continuous subject if well ordered beforehand.

These three subjects, agriculture, geography, and physiology, demand freedom from routine work and from limitations of subject matter. They must be free to change with environment because they draw on it for object lessons. But along with this freedom must come ability to direct and order material. Freedom here, as with freedom in all things else, must be bought with intelligence. It requires a higher degree of skill to teach "without the book" than with it; but the greater the skill the greater the reward. These same statements may rightly be claimed for other subjects, yet nowhere is it so essential to have this freedom than in the studies that have their subject matter based on tangible things. If the teaching of agriculture can create this freedom and extend it to other subjets, then it will have established another claim for its place in the curriculum.

CORN JUDGING

In teaching corn judging we have a branch of agriculture which will yield immediate practical results. To be able to judge corn well is an asset fully as valuable as to be able to grow corn well; for to know good corn is to know good seed, and upon good seed depends in large measure the immediate crop, and what is more important, the continuance of such crops.

We may most profitably begin the study of corn judging about October 1st, having first led up to it in the study of seeds. Cleaner and better samples can be obtained at this time of year than any other. Corn gathering is on at home, and thru the influence of county fairs and corn shows interest in corn is awakened. The first step in corn judging is to obtain some samples of pure varieties. The more the better for comparison. One should have at least one sample of a standard white variety, and one of a standard yellow. A sample should consist of ten ears selected for uniformity. A single ear may be used if it is an excellent individual. These samples should be obtained in the district if possible, or they may be purchased at county fairs and corn shows*

Types once obtained give an exercise in comparison of varieties pointing out similarities and differences. Carefully point out the distinguishing characteristics of whatever breeds you may have. Emphasize the differences between breeds. Give a drill in the recognition of breeds. Following this preliminary lesson let each pupil take a numbered ear of corn to his seat and describe it in writing, noting the following points in order:

I. Shape of Ear—Is the ear (1) Cylindrcial (uniform in circumberence throughout); or

2. Tapering slightly (from butt to tip); or

3. Very tapering?

II. Length of Ear—(Give length in inches.)

III. Circumference of ear—(Give circumference measure taken one third of the distance from the butt. Five foot tape lines to be purchased at five cents each from any dry goods store are best for these measurements.)

IV. Color of Kernel.

1. Straw or Lemon Yellow.
2. Golden or Orange Yellow.
3. White.

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*Where corn cannot be obtained at home a supply can be had from the State Normal at Cape Girardeau, Mo., at the rate of ten cents an ear.

V. Color of Cob.
   1. Red, Pinkish, Dark Red, or White.

VI. Shape of Kernel.
   1. Slightly Wedge Shaped (Good shoulders near the base and broad tip. This is the best shape of kernel.)
   2. Wedge Shaped.
   3. Shoe Pegged Shaped (long and narrow.)

VII. Indentation of Kernel.
   1. Smooth.
   2. Dimpled.
   3. Bridge Dented (when edges of the tip bridging the crease in the middle).
   4. Beaked or Pinch Dented (showing chaffiness).

VIII. Butts of Ears.
   1. Flat (even across kernels and shank).
   2. Shallow (a shallow cavity in the butt).
   3. Moderately Rounded (cavity quite deep).
   4. Deeply Rounded (cavity deep and narrow).
   5. Compressed (kernels short over butt).
   6. Open (wide spaces between rows of kernels at butt).
   7. Enlarged (large butt but no extra rows).
   8. Expanded (large butt caused from extra rows).

IX. Tips of Ears.
   1. Well covered (tip filled out with kernels).
   2. Capped (a central perpendicular kernel on a well-filled tip).
   3. Exposed (space of cob uncovered with grain).

X Space Between Rows.
   1. Wide, Medium, or Narrow.
   2. Rows Paired (alternate spaces wide).
   3. Rows straight, turning to right, or to left.

XI. Number of Rows of Kernels.

X. Cob.
   1. Large, medium, or small (a proper sized cob should be in diameter twice the length of the kernel).

Before this lesson is passed by, the pupil should have described at least ten ears in writing in his note book. Each day's recitation during this time should consist of an oral description of the ear studied. Let the pupil stand before the class with ear in hand showing why he used certain adjectives in his description. The teacher and rest of the class are to criticise.

The following table will be found helpful in the study of breed characteristics. The form is adopted from Prof A. D. Shamel's Manual of Corn Judging. The varieties described are those most generally grown in Missouri:

Characteristics	NAME OF VARIETY								
	Reid's Y. Dent	Leaming	Cartner	St. Charles Yellow	Boone Co. White	Silvermine	St. Charles White	Johnson Co. White	Commercial White
Shape of Ear	Partly Cylindrical	Tapering	Partly Cylindrical	Slowly Tapering	Cylindrical	Partly Cylindrical	Slightly Tapering	Slowly Tapering	Slightly Tapering
Length of Ear	10—10 ½"	10—10 ½"	9—9 ½"	10 ½—11"	10 ½—11"	9—9 ½"	10—10 ½"	10 ½—11"	10 ½—11"
Circumference	7 ¼—7 ½"	7 ½—7 ¾"	7 ¼—7 ½"	7 ¼—7 ¾"	7 ½—7 ¾"	7—7 ¼"	7 ¼—7 ½"	7 ½—7 ¾"	7 ½—7 ¾"
Color of Grain	Lemon Yellow	Orange	Orange	Orange	Pearl White	Cream White	Pearl White	Starch White	Pearl White
Color of Cob	Dark Red	Light Red	Blood Red	Dark Red	White	White	Blood Red	White	White
Shape of Kernel	Slight Wedge	Wedge	Slight Wedge	Round Wedge	Medium Wedge	Slight Wedge	Slight Wedge	Long Wedge	Wdg shape round tip
Indentation	Crease dimple to crumple	Crumple to pinch	Crinkle crease	Crinkle crease	Dimple to beak	Pinch dent	Deep creased	Short pinch to crinkle crease	Shallow crease
Butts	Deeply rounded	Enlarged & mod. r'nded	Flat to mod. round	Flat to mod. round	Moderately rounded	Moderately rounded	Moderately rounded	Shallow rounded	Flat
Tips	Well covered	Exposed	Exposed	Exposed	Well covered	Well covered	Well covered	Well covered	Well covered
Space between Rows	Narrow	Medium	Wide	Wide	Medium	Medium	Sltly paired med. wide	Medium	Paired
No. of Rows	18—24	16—24	18—22	16—20	16—20	16—18	16—18	18—22	16—20
Size of Cob	Small	Medium to large	Small	Medium	Medium to large	Medium to large	Medium to large	Medium to large	Large

Pupils should now try to find ten ears from the home crop that are as good or better than the samples procured by the teacher. These ten ears are used by the pupil himself, each his own ten ears for a scoring sample. Now is the time to use the score card. The county school superintendent will find it advantageous in most cases to have enough score cards printed bearing the name of the county to supply all schools under his jurisdiction. The cost will be much less than for individual districts to purchase them elsewhere*

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* Any teacher who does not have access to county cards may obtain them from the State Normal, Cape Girardeau, Mo., at a cost of one cent each.

The score card which Missouri pupils should study is the one adopted by our State Corn Growers' Association, reproduced below:

MISSOURI SCORE CARD—CORN

Variety ..... Scale of Points	No. of Sample				
Trueness to type and breed characteristics.					
1. Uniformity of Type.....10					
2. Shape of Ears 10					
3. Length of Ears.....10					
4. Circumference of Ears 5					
5. Purity. (a) Kernel..... 5					
(b) Cob 5					
—45					
Maturity and market condition.					
6. Maturity 5					
7. Market Condition 5					
—10					
Yielding qualities and vitality.					
8. Character of Germ.....10					
9. Kernels (a) Shape..... 5					
(b) Uniformity 5					
10. Butts 5					
11. Tips 5					
12. Space 5					
13. Size of Cob 10					
—45					
Total.....100					

VARIETY STANDARDS

Yellow	Length	Circumference
Reid's Yellow Dent .....10 to 10 ½		7 ¼ to 7 ½
Leaming ....10 to 10 ½		7 ½ to 7 ¾
St. Charles Yellow .....10 ½ to 11		7 ¼ to 7 ¾
Cartner .... 9 to 9 ½		7 ¼ to 7 ½
White		
Boone County White .....10 ½ to 11		7 ½ to 7 ¾
St. Charles White .....10 to 10 ½		7 ¼ to 7 ½
Johnson County White .....10 ½ to 11		7 ½ to 7 ¾
Silvermine .... 9 to 9 ½		7 to 7 ¼
Commercial White ....10 ½ to 11		7 ½ to 7 ¾
General Entries ..... 9 ½ to 10 ½		7 ¼ to 7 ¾

Name.....

Date.....

How to Apply the Points of the Score Card

1. Uniformity of Type (10)—For each ear differing in shape, color or indentation from the type of the variety cut from one-quarter to one point.

2. Shape of Ear (10)—Ears should be as nearly cylindrical as possible and have straight rows running from butt to tip. These characteristics usually indicate a high per cent of corn to cob, and a large number of kernels of uniform size and shape for planting. Cut one-fourth to one point for each ear that tapers too greatly.

3. Length of Ears (10)—Add together the deficiency and excess in length of all ears not conforming to the standard for the variety, and for each inch thus obtained cut one point. Should the deficiency exceed 10 inches a cut of two points for each additional inch shall be made on the total score.

4. Circumference of Ears (5)—The deficiency and excess in circumference (one-third the distance from butt to tip) of all ears not conforming to the standard of the variety, shall be added together and for each inch thus obtained a cut of one-half point shall be made.

5. Purity—Kernel (5)—Kernels should be free from mixture with corn of opposite color. Mixture in yellow corn is shown on caps of kernels; in white corn on the sides. For each mixed kernel in an exhibit cut one-fourth point.

Purity—Cob (5)—Cobs should be one color; in yellow corn, red; and in white corn, white. (Except St. Charles White.) For pink cobs cut one-fourth to one-half point for each according to shade. One cob of the opposite color shall bar the exhibit.

6. Maturity (5)—Ears should be well matured, heavy, dry, and the kernels bright and firm on the cob. For immature or loose ears cut not to exceed one-half point.

7. Market Condition (5)—Ears should be free from injury or decayed spots. Ears showing rotten spots or injuries should be cut one-fourth to one-half point. A dead ear should be cut five points. Two dead ears shall bar the exhibit.

8. Character of the Germ (10)—Germ should be full, smooth, bright, not blistered, shriveled or discolored. When broken should show a fresh, oily appearance. Cut not more than one point for each ear showing inferior germs.

9. Kernels—Shape (5)—The ideal kernel is slightly wedge shaped, but not pointed, the length of which is approximately one and one-half times as great as the width of the widest part. For each ear showing kernels of poor shape, cut from one-fourth to one-half point.

Kernels—Uniformity (5)—The kernels from the different ears should be of the same size and shape; also those in each ear should be uniform. For each ear having kernels which differ in shape or size from the majority cut from one-fourth to one-half point. For each ear with very irregular kernels cut from one-half to one point.

10. Butts (5)—An ideal butt on an ear of corn should be well rounded out, with regular rows of deep kernels, solidly and evenly compacted around a clean cup-shaped cavity. Cut not to exceed one-half point for each defective butt.

11. Tips (5)—The tips should be filled out to the end with deep kernels in regular rows. The ideal tip is completely covered, but if kernels are deep and regular to end of cob no cut need be made. Cut not to exceed one-half point for each defective tip.

12. Space (5)—There should be no open space between rows, nor between the kernels in the row, either at the crown or at the cob. Cut not to exceed one-half point for each ear seriously defective in this respect.

13. Size of Cob (10)—The cob should be medium in size with diameter about twice the depth of the kernel. Too large a cob gives a low per cent of corn, while too small a cob does not favor a large yield per acre. Cut from one-half to one point for each ear markedly out of proportion in this respect.

1. Before asking pupils to score corn it is well to go over the score card with them point by point, applying it to a sample, and estimating the value of the sample in that particular point. In the first point three things are to be noticed: Uniformity in shape, in color, in indentation. Type here does not necessarily refer to any particular breed. In looking over the sample one should select his own type, to consist of the best ears among the ten which look most nearly alike. Shove these ears out a little way so that their characteristics may stand out in contrast to the others. These ears are to be the standard in shape, color, and indentation. Compare each of the other ears with these in each of the three things separately, marking off according to the degree of variation as the score card directs. Subtract the total amount taken off from the perfect score (10) and mark down the difference in the line corresponding to the number of the sample.

2. In observing shape of ear, the cylindrical form is required in order to maintain the same size grains throughout, but judgment here depends largely on the breed of corn. In Leaming, a moderate taper is one of the breed requirements. In Reid's Yellow Dent a very slight taper may be passed over. In Cartner, a slight fullness in the middle is expected. All other breeds must

be cylindrical or approach it closely. Examine each ear and mark off according to the variation from the breed type. Also mark off for crooked ears and twisted kernels.

3 and 4. Measurement may be accomplished most conveniently with a small tape line.

5. Caution is advised in judging Reid's Yellow Dent for purity of kernel, for in this breed there are often kernels having such light shades of yellow as to be mistaken by beginners for mixed kernels. The term "according to shade" is relative only. The type color of ear must be remembered and variations from it in either direction are cut accordingly. Purity in kernel and cob is an important point. It is the measure of the worth of the corn for seed. Mixed seed and an off-color cob are matters of inheritance, and must be guarded against if one would raise uniform corn. In later exercises in corn-scoring or judging contests it is well to insert an ear off-color in cob into an otherwise good sample. An oversight of such a feature pointed out by the teacher or some bright member of the class stimulates to keener observation.

6. Aside from general appearance, we determine the maturity of an ear by taking it in both hands and lightly twisting it. If it yields readily it is unripe or immature. A considerable latitude may be given new corn in this respect, but very loose ears at gathering time will never become solid.

7. Dead ears are sometimes hard to detect. They are usually light in weight, with shriveled, pale white, or cheesy germs. A typical dead ear or two in which the quality of deadness is not readily detected is useful to insert in a sample occasionally to cultivate keenness of observation.

8 and 9. The character of the germ is another very important point. Upon the size and quality of the germ depends the power of the corn to grow. In addition to the points mentioned on the score card, length, depth, and breadth of germ are considered. A very essential matter in regard to the injury of corn samples by rough or careless handling should be impressed on the mind of the pupil at this point. Each sample of corn is someone's private property. Not even a corn judge has a right to mar an exhibit or sample by shelling off grains unnecessarily, breaking ears, or carelessly letting them fall. The owner may want to exhibit his corn elsewhere, and if the next judge finds grains out promiscuously he does not know but that the owner has taken out mixed grains to avoid being scored down for them. He therefore scores down for kernels out just as for mixed kernels. In order to determine the character of germ and shape of kernel the ears should be laid side by side in a definite order—1st, 2d, 3d, etc. The order

should be determined by uniformity and relative perfection of ears. This order should not be disarranged. From each ear two grains may be taken from the middle. Lay the grains in a row along the ends of the ears, each two opposite their parent ear. Such an arrangement opens the cob to view and a fair sample of germ and shape of kernel is obtained without injury to the ear. The uniformity of kernels is determined by observation of the kernels on the ear. Note that irregularity is considered from two standpo'nts: One from the comparison of ears, the other from a comparison of all of the kernels on each ear taken separately. The importance of uniform kernels is easily recognized when one thinks of getting an even stand in planting corn with a corn planter.

10 and 11. Butts and tips are best learned by comparison. An ear of any type should be selected conforming as nearly as possible to photographs of type standards obtained from books and bulletins. This ear may then be used as a standard good butt or good tip, with which all other ears may be compared. A good estimate of the tip may sometimes be obtained by placing the hand over the ear at the place where the kernels begin to round off into shot-shaped forms, or where the ear begins an abrupt taper. Good butts are demanded because they indicate a high percentage of corn to the cob. Good tips are demanded because they indicate vigor in the parent plant. Poor tips are not always due to lack of vigor, however; sometimes lack of fertilization is responsible. But if the kernels are formed and round off and become shallow we may know there has been lack of vigor or food supply. When the full diameter of the cob is left uncovered at the tip cut one-half point. For less than full diameter cut in proportion.

12. Wide spaces between rows and round-topped kernels give us a low shelling percentage of corn to cob. Hence the reason for requiring "no space between rows."

13. Medium-sized cobs are best. Small cobs do not furnish space enough for corn attachment. Large cobs are generally sappy and require a long time to dry out. Hence they are subject to rot or mold; also if freezing weather comes on while they are wet the expansion of the water in the delicate cells of the embryo plant in the germ causes these walls to burst, destroying the life of the germ.

To gain practice in scoring, pupils may be allowed to exchange samples till each sample has been scored by all pupils. Scorings should then be compared and each sample discussed in class. The next step is the scoring of a single ear. Let each pupil select what he thinks to be the best ear from his own sample and score it. A

single ear is scored just as a single ear in a ten-ear sample, ten points being the most any ear can receive. As the ear is scored on each point the result must be multiplied by ten to place the scoring on the basis of the ten-ear sample.

The previous work with the score card should have trained the pupils to be accurate in their observations. Now for the practical application. While the pupil has been learning corn ideals by the use of the score card he should have been urged to be on the watch for the best ears to be found in the home crop. Advise him to place a box or barrel in the feed bin, where the best ears from out the corn that is being fed may be thrown. The boy or girl may visit this box occasionally to remove the most promising ears. Let him put this corn away where it will not be disturbed by mice. Much good show corn may be selected from a good crop in this manner without taking a great deal of time. From these best ears, samples may be made up which will far surpass the pupil's first selection.

We are now ready to hold a district or interdistrict corn show. In some instances it may be desirable to include this event in Patrons' Day exercises. The event should be planned and carried out with all the details of a real corn show. Honor prizes, both in exhibit and skill in judging, may be given. In rare cases perhaps money prizes may be offered. If there is a large enough class of interested pupils a Boys' Corn Growing Association may be organized; otherwise the teacher should direct the affair. To make the show seem more real, pupils may prepare premium ribbons of blue, red, white, and yellow paper. Better still, in the event of an interdistrict show, real premium ribbons may be obtained at a printer's office at small cost.

The premium list for a corn show should be divided into at least four classes. Each class is subdivided into lots. Exhibitors may make no more than one entry in any one lot. The arrangement of the premium list should be in the following form:

CLASS A.

Premiums for best samples of ten ears of standard varieties of white corn.

Lot 1—Boone County White. First premium, blue ribbon; second premium, red, etc.

Lot 2—St. Charles White. First premium, blue ribbon; second premium, red, etc.

Etc.

CLASS B.

Same as "A," but for yellow corn.

CLASS C.

Same as "A," but for mixed varieties. This class includes corn not of any recognized variety. The only requirement is that it shall be uniform. The measurement limits will be found on the score card under "general entries." The lots may call for yellow corn, white corn, mottled, or any other color. Sometimes the lots call for early, medium, and late corn.

CLASS D.

Premiums for best single ears of corn.

Lot 1—Boone County White. First premium, blue ribbon; second premium, etc.

Lot 2—Silvermine. First premium, blue ribbon; second premium, etc.

One lot is allowed for each breed of corn and one for "general entry."

Sweepstakes premiums may be allowed for best ten ears, any variety, and for best single ear of any variety.

The ribbons should be placed by some disinterested party if such person can be procured; or by the teacher himself. No ribbons should be placed until the pupils have had a chance to judge in contest. Each contestant keeps his judgments to himself till called upon to give his reasons for his placing. In his judging each pupil should have a small card bearing his name. On this card he writes, "Sample placed first, No. 5; sample placed second, No. 3; sample placed third, No. 1," etc., for five places. This card is handed in and then from memory the pupil states his reasons for placing one sample above another to the fifth place. This is not an easy thing to do and only one set of samples should be used at first, white corn only, for instance. But later, as the pupil gains proficiency let him judge all the classes and turn in all the cards before giving his reasons for placing. This will be found to be one of the finest exercises that can be arranged to secure clear thinking and accurate expression.

Objection may be raised to the amount of time such an elaborate plan as this will consume.

It is true not every subject of which our agricultural texts treat could be taught thus elaborately and the courses finished in one year; yet merely getting through the book should not be our object in teaching agriculture. Again, it is the avowed object of this bulletin to help teachers become independent of books. We ought to teach well first that which will be of most immediate benefit and importance to our pupils. Let other things come in where they will. To do the work as outlined will require from four to six weeks of regular class time. No equal amount of time

given to any other study or branch of agriculture will create more interest or furnish greater stimulus to real thinking than this. It is entirely worth the effort. It is also recommended that Friday afternoon exercises in corn judging be given once a month to keep pupils up on the subject.

As a final event in corn judging we recommend most emphatically that a corn exhibition and corn-judging contest be held along with other contests at the county graduation exercises each spring. The more contests of different nature that can be brought into these events the more interest will be created and the more interest the more pupils we retain in our schools.

Some difficulty will be experienced in keeping corn in the school room from being injured by mice and grain weevil. Old leaky wash boilers, lard cans, coffee boxes, or dry goods boxes lined with wire netting will be found very serviceable as containers. Every school ought to have a half dozen spring mouse traps which should be set regularly once or twice each week. Such precaution will keep the school room well rid of this pest. Once every month or two the corn should be put into a tight receptacle such as the wash boiler and a shallow dish placed on top of the corn. Pour about two table spoonsful of carbon bi-sulphide into this vessel and cover the boiler tightly. The carbon bi-sulphide evaporates and kills all insects that may be present. Carbon bi-sulphide may be purchased from any druggist at small cost. Care must be taken not to have fire near the sulphide, as it is explosive. The bottle should be kept in a dark place.

References.

The following books and bulletins are recommended as aids in corn judging. Only those that directly bear on the subject are listed:

Books:

Manual of Corn Judging, by A. D. Shamel.
(The most complete book on the subject.)
Orange Judd Company, New York City, 50 cents.

Examining and Grading Grains, by Lyon and Montgomery.
(Includes all grains, brief, but good.)
Ginn & Company, Chicago. 50 cents.

Corn, by Bowman and Crossley.
(A complete treatise on the subject of corn, advanced.)
P. C. Taff, Ames, Iowa. $2.00.

Bulletins:

The Selection of Corn for Show, by M. F. Miller,
College of Agriculture, Columbia, Mo.

Co-operative Corn Variety Tests, Bulletin 87,
College of Agriculture, Columbia, Mo.

JUDGING THE HORSE.

Stock judging in rural schools is almost an unheard-of thing. High schools do very little of it as yet. A boy has to go to college to learn what constitutes a good animal. Is there any good reason why this should be so? Is not live stock a very considerable part of the environment of country and village children? Have not educators everywhere observed that young people, especially children, have a keener interest in animals than in any other part of their environment? Are not pets used to cultivate gentleness and self-control in children? When is a farm boy so proud as when he gets his first colt or calf or pig? Why do we not utilize this interest in our scheme of rural education to make it more attractive to the twelve or fifteen year old boy who thinks it time to quit school, be a real farmer, and make money? Must we wait till every one else learns to utilize the available equipment of the farm before we begin? Or shall we begin and let others follow?

For various reasons the horse offers the best subject with which to begin lessons in live stock judging. The first lesson will require an hour or more of time and may extend over two or three days, half of the noon hour being utilized if no more convenient time is available. The teacher should look about in the neighborhood for a reasonably good, gentle horse. Have a pupil bring this horse to school. At the hour set for judging have one boy hold the horse and the rest observe. The teacher must do the greater part of the first judging, but always after explaining a point on the score card have the pupils help make the decision as to the degree of perfection of the point in question on the animal under study. *Score cards may be used from the beginning in scoring horses and all other stock. Each pupil should have one score card for every animal judged. Two sets of score cards are used in judging horses, one for the light horse, one for the heavy one. Light horses fall into several groups: The principal ones are roadsters, saddlers, trotters and pacers, and carriage horses. All these are judged by the light horse score card. The light horse score card is reproduced here because this section of Missouri produces more horses of this type than any other. The form of the card is a copy of the card used by the College of Agriculture, University of Missouri. It is the standard for this state:

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* Score cards for live stock should be obtained from the County Superintendent. If he can not furnish the supply send to the State Normal at Cape Girardeau, Mo. All stock-judging cards are furnished at one-half cent each.

SCORE CARD—LIGHT HORSES

SCALE OF POINTS	Possible Score	Points Deficient. Student's Score	Corrected
Age			
General Appearance—28 Points			
Weight, estimated.....lbs.; actual,.....lbs.			
Height, estimated.....hands; actual.....hands	2		
Form, symmetrical, smooth, stylish	4		
Quality, refined; bone clean, fine; tendons clean, defined; hair and skin fine	4		
Action, energetic, straight, true, elastic; walk, stride long, quick, regular; trot, free, balanced, rapid	15		
Temperament, active; disposition good, stylish carriage	3		
Head and Neck—11 Points			
Head, proportionate, well carried, features well defined, profile straight	1		
Muzzle, neat; nostrils large, flexible; lips thin, firm, even	1		
Eyes, full, bright, clear, large, same color	1		
Forehead, broad, full	1		
Ears, medium size, tapering, well carried, alert	1		
Lower Jaw, angles wide, space clean	1		
Neck, good length, well muscled, arched; throat-latch fine, clean; windpipe large	2		
Forequarters—20 Points			
Shoulder, long, sloping, smoothly muscled, extending into back	3		
Arm, short, strongly muscled, thrown back, well set	1		
Forearm, long, wide, clean, well muscled	2		
Knees, straight, wide, deep, strong, clean, strongly supported	2		
Cannons, short, clean, wide; tendons large, clean, set back	2		
Fetlocks, wide, straight, strong, clean	1		
Pasterns, long, sloping, strong, clean	3		
Feet, medium size, even, sound, horn dense, waxy; soles concave; bars strong, full; frogs large, elastic; heels wide, strongly supported	6		
Legs, viewed in front, a perpendicular line from the shoulder should fall upon the center of the knee, cannon, pastern and foot; from the side, a perpendicular line dropping from the center of the elbow joint should fall upon the center of the knee and pastern joints and back of hoof	3		
Body—10 Points			
Withers, moderate height, smooth, extending well back	1		

SCORE CARD—LIGHT HORSES (Continued).

Chest, deep, wide, breast bone low; girth large	2		
Ribs, deep, well sprung, closely ribbed to hip	2		
Back, broad, short, strong, muscular	2		
Loins, broad, short, wide, strongly and smoothly muscled	2		
Underline, long, low; flanks well let down	1		
Hindquarters—31 Points			
Hips, broad, smooth, level	2		
Croup, long, wide, muscular, not drooping	2		
Tail, attached high, well carried	1		
Thighs, deep, broad, strong, muscular	2		
Quarters, deep, heavily muscled	1		
Stifles, strong, clean, muscular	2		
Gaskins, (lower thighs) long, wide, muscular	2		
Hocks, large, strong, wide, deep, clean	6		
clean, set back, well defined	2		
Cannons, short, clean, wide; tendons large, clean, set back	2		
Fetlocks, wide, straight, strong, clean	1		
Pasterns, strong, sloping, springy, clean	3		
Feet, medium size, even, sound, horn dense, waxy; soles concave; bars strong, full; frogs large, elastic; heels wide, strongly supported	4		
Legs, viewed from behind, a perpendicular line from the point of the buttock should fall upon the center of the hock, cannon and foot; from the side, a perpendicular line from the hip joints should fall upon the center of the foot and divide the gaskin in the middle; and a perpendicular line from the point of the buttock should run parallel with the line of the cannon	3		
Total	100		

Animal ..... Date .....

Student ..... Standing .....

When we begin to judge a horse the first point to observe is age, for then we may know if the animal is undersized or overgrown. Age is estimated in horses by the teeth. (This point may be omitted if pupils are young. Yet it is well to explain the order of age marks in the teeth.) Most boys on the farm do not know this, and all would like to know. The front teeth of a horse on either jaw are six in number. The two center teeth above and below are called centers; the two next them on either side are the middles; the two outside are the corners. Below we print a table of age marks which will be found fairly accurate:

TABLE OF AGE MARKS—THE HORSE.

Milk Teeth.

Colt at birth or three days after—centers cut.
Colt four to six weeks old—middles cut.
Colt six to ten months old—corners cut.

Permanent Teeth.

Colt 2½ to 3 years old—Milk centers shed, permanent centers in wear.

Colt 3½ to 4 years old—Milk middles shed, permanent middles in wear.

Colt 4½ to 5 years old—Milk corners shed, permanent corners in wear.

On the top of each permanent tooth is a dent called a "date cavity." As the tooth wears down it is sometimes called the "table." These tables disappear at approximately the following ages:

Horse 6 years old tables gone from lower centers.
Horse 7 years old tables gone from lower middles.
Horse 8 years old tables gone from lower corners.

The tables from the upper incisors disappear more irregularly but in general as follows:

Horse 9 to 9½ years—tables gone from upper centers.
Horse 10 to 10½ years—tables gone from upper middles.
Horse 11 to 12 years—tables gone from upper corners.

A horse fed on soft feed will retain his tables longer; one on sandy pasture or gritty feed will lose them sooner than the times indicated.

After estimating the age one should stand back some twenty feet from the animal to note the "general appearance." Weight, height form, quality, action and temperament constitute general appearance. Look at the animal first from the front, then the side, then the rear. Guess his weight and put it on the score card. Weight will have to be entirely a matter of guess work unless scales are in the neighborhood. Height is guessed first and later determined by a plumb line tape measure, measuring from the top of the withers down the fore leg to the ground. Count 4 inches to the hand and record in hands. A light horse must be 15 to 15½ hands high, with a weight from 900 to 1100 pounds for roadsters. Coach horses are in the main limited to 15½ to 16 hands with a weight ranging between 1200 and 1400 pounds. For every 50 pounds under or over these standards score off one-fourth point on the score card. In scoring live stock we mark

down what is taken off, then, after the score is completed, we subtract the total from the perfect score 100.

As you walk around the horse note if any part of the body is out of proportion with other parts. Is the head too large or too small? Are the ears too large? Is the forehead broad enough? Is the lower jaw too heavy? Is the neck too thin? Are the legs straight and clean cut? Is the back short and close coupled in the loin? Is the animal "slab sided"? Are the hips too prominent? Does the croup slope too much? Are the feet and bones proper size? These things are what the score card means when it says, "Form must be symmetrical, smooth, stylish." Four points are allowed for a perfect animal. Take off from one-fourth of a point up, according to the amount of variation from what you believe would be perfect. Ideals will have to be gained by close study of photographs of the world's best animals.

Quality is determined by the bones, skin, and hair. The bones of the head and legs must be clean cut and hard; that is, free from outgrowths and sponginess. In feeling of the skin it should melt away under your fingers as though you were feeling of a kid glove. The muscles and tendons must stand out clearly defined. The blood vessels just under the skin should be easily traced. The hair must be fine and silky. All these marks indicate endurance and ability to respond quickly to a word of command.

Action in a horse is determined by his walk and trot. In the walk a horse must pick up his feet with quickness and with a free, easy movement. From behind one should be able to see the whole face of the foot for an instant. The foot is to be carried forward straight and set down lightly. There must be no shuffling, no dragging, no paddling, that is, throwing the feet outward as they are carried forward. The steps must show elasticity and energy. From behind we notice the hock, which must move forward in a straight line, bending neither outward nor inward. The hocks must be lifted high and bend with ease. The evenness of gait is determined from the side. If the back is too long you get the impression that the horse is pulling his hind parts after him; if too short the feet seem to interfere and the animal seems to be going on an uncertain or stilted foundation. Any lameness is also quickly detected from the side.

Temperament is determined from the eye, whether it is bright and clear, taking notice of things or not; whether it shows good temper or ill temper; from the ear, whether it is alert and well carried; from the action and carriage of body, whether nervous or not. Nervous does not mean irritable and fidgety; just the oppo-

site. It means quickly responsive to nerve impulses and entirely under the control of the animal's own will. In a word temperament means fully alive to all that is going on.

These qualities relating to general appearance are perhaps the hardest to determine of all the points on the score card. The proper judgment of them must be gained by practice and felt rather than learned; therefore after explaining general appearance and having the pupils estimate the degree of each quality possessed by the animal, we may pass over these points without further criticism; but in later exercises gradually emphasize them more and more. Craig's "Judging Live Stock" will prove an invaluable aid in giving a conception of these very important points.

After getting the conformation of the animal well in mind then approach and examine point by point more closely.

Head and Neck—These parts are sufficiently well explained by the score card.

Forequarters—The forequarters of a horse present an interesting study in comparative anatomy. The horse's shoulder bone is homologous to the shoulder blade in the human body. The horse's arm, corresponding to our humerus bone, extends from the shoulder point backward to the point where the fore leg leaves the body. This point is comparable to our elbow. The depression just behind it, into which the elbow works, is called the fore flank. The card calls for an oblique shoulder and a short, well-

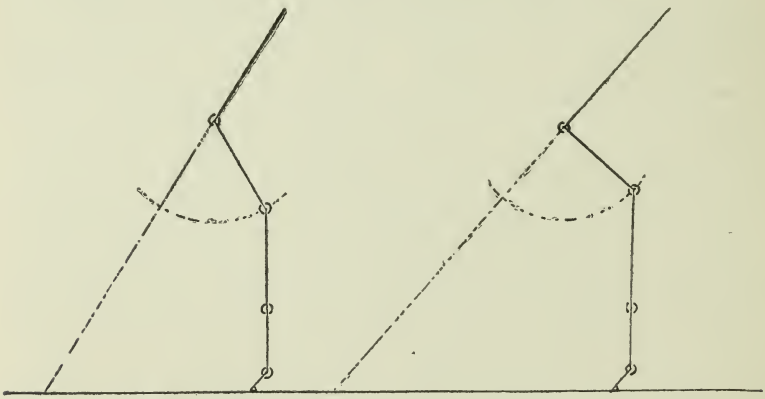

FIGURE No. 1.

Showing how slope of shoulder and angle of arm bone shorten the step of a horse.

set back arm. The diagram shows why these qualities are essential.

The forearm is homologous to our own fore arm and extends on the horse from the elbow to the knee. The knee then must correspond to the wrist in the human arm. The fore arm in a horse must be long. The longer the better, if not out of proportion with the rest of the body, because the muscles in this part move the fore leg. The longer they are the greater the amount of contraction of which they are capable, and hence the quicker the movement. The muscles that give power must be short and are found in the arm bone. Thus the muscles in the arm must be short, deep and powerful. Those in the fore arm must be long and broad to add speed to power.

The knee and all other joints must be large, deep, wide, broad, and strong. Free from all unnatural outgrowths, as splints, spavins, puffs or other enlargements. When a joint is free from these we call it a "clean" joint.

Below the knee is a short bone called the cannon. It corresponds to the middle meta-carpal bone in the hand. Behind it you may feel two little bones fastened to it, extending about one-third of the way down. They are the vestiges of the two meta-carpal bones, which in our own hand are on either side of the middle meta-carpal bone. The cannon must be short, because over it the tendons convey the power of the horse's movement to the foot. It is a well-known principle that the most effective power must be as near the load as possible. The tendons must set well back in order to give leverage. Horses having small knees and close-set tendons often become weak-kneed and stand with the knees set slightly forward.

The fetlock is homologous to our knuckle joint; the pastern is homologous to the largest of our middle finger bones. The score card says "long, sloping, strong, clean." Long and sloping (at an angle of 45 degrees) to give springyness to the step. Strong to prevent giving down in the pasterns. Clean, free from bony outgrowths, called side bones. Just below the pastern and under the crown of the hoof is a very short bone called the corona, which is homologous to our second middle finger bone and in the hoof is a triangular shaped bone which takes the place of the outer bone of our middle finger. The hoof, of course, corresponds to our own finger nail. The base of our finger nail which we call the quick is called the crown in the horse's foot. It should be large to promote good hoof growth. The end of our finger nail corresponds to the toe of the hoof, which in the horse must be

large. The edges of the hoof where they approach, called the heel, must be high and wide apart to give room for a large frog. The frog is the triangular growth resembling an arrow head at the back and underneath the foot. The bars are supporting ridges on either side of the frog and are really the turned-in edges of the hoof. The sole constitutes the remainder of the bottom of the foot and is required to be concave to protect the frog. A horse that does not have a concave sole is said to be flat-footed.

Body—The chest of a horse is required to be deep, that is prominent, and low in front below the neck, and large in girth just back of the fore legs. Depth and prominence are required rather than breadth. Much breadth of chest causes the horse to wobble from side to side in trotting, because it throws the weight from side to side. Depth and prominence and large girth are requred for lung capacity.

The ribs must be well sprung from the vertebra to give breadth of back; must be deep to give capacity; must be closely ribbed to the hip for strength of back and to prevent weakness in the loin. The space between the last rib and hip is called the coupling. If this is short it allows for a strong loin and denotes easy keeping. The back must be short for strength. The back is measured from the top of the withers to the coupling or to the last rib. It should be about half as long as the underline or line between the fore and hind flank underneath the body. The underline needs to be long for free play of the legs. The space on the back between the last rib and a line across the hips is the loin. It should be short, broad, and deeply covered with muscle, for this is the connecting link between the fore and hind parts of the body.

The Hind Quarters—Here again are many points of interest. The croup is the space from a line across the hips out to the pin bones and tail head, the pin bones being the projection of the pelvis bones on either side and just below the tail head. The tail attached high means that the tail head should be almost on a line with the back. The thigh is that region on the outside of the hind leg extending from the pin bones across to the hip joint and down to where the leg begins to taper toward the hock. The quarter refers to the muscle on the inside of the leg, which should be plump with muscle well down the leg. It is in the thigh and quarter that a horse gets his main propelling power, hence the necessity of a great deal of muscle in these parts.

From a point just forward from the pin bone to a point on the leg just beneath the hind flank extends a very large short bone which corresponds to our thigh or femur bone. It ends in a joint

called the stifle joint, comparable to our knee, which, on the horse, as above stated, is very near where the leg leaves the body. Resting a little above this joint is a small bone comparable to our knee-cap. Some times this bone is thrown out of place. It can never be replaced and become strong again. A horse thus afflicted is said to be stifled.

From the stifle joint to the hock is the gaskin, the bone homologous to the tibia in the human body. The gaskin muscles are comparable to the calf of the leg in our bodies. From this muscle the hind leg gets its quickness of motion; hence the gaskin should be long and covered with muscles extending well down to the hock for the same reason as has been stated for the fore arm.

The hock is interesting in its structure, because it is homologous to the human heel and ankle joint. It is the most important joint in the horse's body, for it must support the full weight of the load being drawn. The greater the depth of the hock from behind forward, the greater leverage the tendons have in pulling over the bones. Bony outgrowths on the inside lower part of the hock are called bone spavin. Bog spavin is a soft swelling in front of the hock. Thoroughpin is a soft swelling in the upper part of the hock between the tibia bone and the large tendon, which we call the tendon of Achilles. A swelling on the projection of the hock is called a capped hock. A hard outgrowth on the back of the leg at the base of the hock is a curb. These are unsouundnesses due to overstrain or to naturally weak hocks. The hocks must allow a proper curve to the leg as viewed from the side, such that when the animal is standing straight a line dropped from the pin bone would fall along the back of the cannon bone and parallel to it. A leg straighter than this is apt to develop spavins while one set in more is called a set hock and is liable to develop a curb.

The hind cannon bones are homologous to the meta-tarsal bones of the human foot: the fetlock joint with the ball of the foot, the pastern with the first phalanges bone of the middle toe, and so on as in the fore foot. At the base of the pastern bone, where it joins with the corona, or just above the crown of the hoof we sometimes find bony outgrowths on the side. These are side bones. In front just above the crown of the hoof a bony outgrowth usually indicates ring-bone.

Do not hurry over this work. It is interesting and valuable. Take all the time needed. Then have the pupils bring other horses, each his own, if he is so fortunate, and score individually, comparing scores in class and discussing them with the teacher.

Score different animals until pupils become fairly quick and skillful in their observation. Now throw away the score card. Have four or five horses brought together. Fold a sheet of paper forming four pages. Give one to each pupil. Let them look over each horse critically, mentally noting its strong points and its deficiencies. Have them write on the first page the name of the horse they think is best; on the second page the second best; on the third page the third best; the fourth page the fourth best. Under these headings have them write their reasons for placing each animal as they did mentioning the strong points first, the deficiencies last. Do this until the pupil becomes proficient in giving reasons.

Now throw away the folders. Substitute cards on which the pupil merely states which animal is first, second, third, etc. The cards are to be given to the teacher, the horses removed, and each pupil recite from memory his reasons for his placing. When a pupil states reasons never allow him to say one animal has a better head or neck or thigh than another; state in what respect one part is better than another.

JUDGING DAIRY CATTLE.

The dairy score card is chosen for explanation here, because the dairy cow is a more universal type than the beef animal. In districts where beef cattle predominate the beef cattle score card may be substituted. The same general principles which apply in teaching one class of animals apply in teaching all classes. Weight and form standards must be obtained from books and applied to each class of animals until learned.

STUDENT'S SCORE CARD—DAIRY CATTLE.

SCALE OF POINTS.	Possible score.	Points Deficient.	
		Student's score	Corrected.
Age, estimated.....years, actual.....years			
General Appearance—23 Points			
Weight, estimated.....lbs., actual.....lbs. score according to age	3		
Form, deep, low, wedge shape as viewed from front, side and top; standing squarely on legs	5		
Quality, bone of firm texture; hair fine, soft, skin mellow, loose, medium thickness; secretion yellow	5		
Condition, healthy, spare fleshed	3		
Style, active, graceful carriage	2		
Temperament, alert, tractable, highly developed nervous system perfectly controlled, indicated by clear placid eyes, marked refinement about head, neck and forequarters, prominent backbone and normal activity	5		
Head and Neck—10 Points			
Muzzle, good size, lips thin, nostril large and wide apart, jaws wide and strong	2		
Face, medium length, broad, slightly dished	1		
Eyes, large, full, clear bright, placid	2		
Forehead, broad, slightly dished	1		
Ears, well carried, fine, medium size, yellow inside	1		
Neck, medium length, fine, throat clean, dewlap slight	3		
Forequarters—6 Points			
Shoulders, light, narrow at top	3		
Brisket, light	1		
Legs, straight, short, strong, shank fine, feet sound	2		
Body—22 Points			
Back, strong, prominent spinal processes, wide apart	3		
Chest, deep and moderately wide, girth large	4		
Ribs, deep, wide apart, well sprung	4		
Loin, broad, strong, with roomy coupling	3		

STUDENT'S SCORE CARD—DAIRY CATTLE (Continued).

Barrel, deep, wide, very capacious	8		
Hindquarters—39 Points			
Hips, wide apart, prominent; level with back	2		
Rump, long, wide, straight or slightly rising; pelvis roomy	3		
Pin Bones, high, wide apart	1		
Tail, set high, long, tapering, heavy switch	1		
Thighs, thin, long, wide apart; twist very open	3		
Eschutcheon, spreading over thighs, extending high and wide; large thigh ovals	1		
Udder, broad, symmetrical, extending well up between the thighs, free from fleshiness, well held up, and quarters even in size	18		
Teats, good size, evenly placed	4		
Milk Veins, large, tortuous, branching, milk wells large, numerous	4		
Legs, straight, short, strong; shank fine, feet sound	2		
Total	100		

Disqualifications .....

Animal ..... Date .....

Student ..... Standing .....

General Appearance.

Weight in scoring dairy cattle has no value on the score whatever. It is placed on the card to give pupils practice in estimating weight. The whole general appearance of any animal is the first slowly around. From the front note if the animal is wedge shaped, cally from some little distance, beginning at the head and walking slowly around. From the front note if the animal is wedge shaped, the apex of the wedge along the back bone, the base at the shoulder point and extending backward with increasing width; note if the animal appears wedge shaped from the side, the apex of the wedge in the fore quarters, the base in the hind quarters; wedge shaped from the top, with the apex of the wedge in sharp shoulder blades fitting closely to the back bone, and the base of the wedge in the hip bones which should be prominent. The wedge shaped form and the angularity that goes with it are of no value in themselves except that they indicate that the animal has great capacity for food and breathing; also that the substance of this food does not go to the formation of fat or muscles to any great extent, hence it must go to the formation of milk.

Quality as indicated by soft, fine hair, mellow skin, etc., is im-

portant in that it indicates the same quality in the animal's inner structure. The skin continues as the mucus membrane throughout the entire alimentary canal. The skin, mucous membrane, and nervous system all had their origin from the same fundamental tissue in the embryonic animal. Hence the qualities that apply to the part that can be seen apply also with equal force to the parts that can not be seen. Fine skin and hair, therefore, with abundant oily secretion indicates a delicate and responsive alimentary canal with abundant digestive secretions under the control of a delicate responsive nervous organization. The yellow secretion called for by the score card is more apparent in the ear than elsewhere.

Temperament—In the use of the term nervous we do not mean to imply that the animal is excitable and scary. It is the antonym of the word nerveless and means responsive to outside influence. It refers to a lively, yet docile disposition. The eye is an index to temperament. It should be placid, but not sleepy. The animal should be alert and take notice of things. These indications of life and activity indicate that the vital organs are also active.

Head and Neck—The general appearance determined, walk up to the cow from the front. Note first the muzzle. A large mouth is called for, because it suggests that the rest of the digestive organs are large. Large nostrils suggest the same for the windpipe and lungs.

Large, bright, full eyes indicate good disposition and temperament.

The face is the part from a line across the eyes to the muzzle. Refinement here as described on the score card indicates the feminine quality upon which milk production depends. The forehead must be broad to show intelligence and dishing slghtly for the same reason as in the face. The words used to describe the ears and neck also describe the feminine quality. The least coarseness in the neck indicates a coarser, more masculine nature as this part is highly developed only in the male. The dewlap is the loose skin hanging to the under part of the neck.

The fore quarters for the same reason as the neck must be light. The brisket is the prominence caused by the sternal bone projecting forward from between the fore legs and should be light because it has nothing to do with milk formation. The shank is the same as the cannon bone in the horse.

The body has many points of vital importance. The chest is measured just behind the shoulders. Its depth and width, together with the spring of ribs, give large breathing capacity, which

is required to purify the large quantity of blood which comes in from the udder. In the horse and in beef cattle the spring of rib must start from the spine in order to give a round, full back. In the dairy cow the spring of rib should be in the lower part, giving the characteristic wedge-shape which furnishes so much capacity for food. The ribs are to be widely spaced, also indicating lack of flesh-producing power, which means more power to produce milk. Prominent, wide-apart spinal processes on the back also indicate lack of fattening qualities. The loin in all animals should be broad and strong, but the coupling in dairy cattle (the space between the ribs and hip), must be roomy in contrast to horses and beef cattle, where the coupling must be short. The roomy coupling denotes capacity. For capacity also the barrel (main body) must be large.

Hind Quarters.

The rump in cattle is the same as the croup in horses. The description of hips, rump, and pin bones indicates that the animal must have a large, roomy pelvis. A long, tapering tail, which ends at the hocks, and has a heavy switch, denotes fine quality. The thighs must be thin, long and wide apart to make room for the udder. The twist is the part between the hind legs above the crotch. The twist should be open to afford a high attachment for the udder. The escutcheon is the region over the thighs where the hair grows upward. At the top the escutcheon ends in a whorl of hair on either side called the thigh ovals.

The udder is the most important part about the cow. The greater surface attachment to the body it can have the more room it will have to hold milk. The udder must feel soft and yielding, containing no lumps nor excess flesh, because this is in the way of milk glands. It must be "well held up," which means the udder should not hang limp with space between it and the body. Each quarter, that is, each part that supplies a teat, should be as large as any other quarter. A frequent fault in this respect is that the hind quarters are larger than the fore quarters. The teats evenly placed means that they should be well separated, evenly spaced, and about the same length.

The milk veins are the large outstanding blood vessels which carry the blood from the udder forward under the belly to the front. The larger and more tortuous they are the more blood they can carry, hence indicating that much blood goes to the udder to form milk. Here and there along the veins are pockets called milk wells. The largest one is where the vein enters the body.

After the demonstration lesson practice judging cattle the

same as in judging horses. We recommend the same method of procedure as used with the horse, subject to variation by the originality of the teacher.

References.

The two books listed below are considered to be valuable as references. Altho used by colleges they are written in a style easily followed by a seventh or eighth grade pupil. We recommend them for rural school libraries as well as high schools. To the teacher who is trying to teach live stock judging they are quite essential for successful work. They are much too advanced for use as texts, but may be used to great advantage for supplementary reading and reference. The photographs of breed types to be found in these books will be found worth the cost:

Books:

Judging Live Stock, by John A. Craig.
(Most valuable for a discussion of "points" in all classes of live stock.)
Published by Kenyon Printing Co., Des Moines, Iowa. Price, $1.25.

Types and Breeds of Animals, by C. S. Plumb.
(Best for history and characteristics of breeds).
Published by Ginn & Co., Chicago. Price, $2.00.

Conclusion.

This little bulletin is offered to the teachers of Southeast Missouri with the hope that it will help them to teach a more effective agriculture. Pupils having gone through the book in agriculture may sometimes think they have mastered the subject and will not care to repeat the process the following year. A few lessons in corn or stock judging will soon convince the wisest that agriculture can not be mastered from a book. He will see that the average farmer's prejudice against "book farming" is correct. He will also see that mere work does not constitute all of farming. His school work will give him something new to think about and do on the farm, something that will call attention to himself, something that will forestall his craving to be an engineer or a doctor or a lawyer or somebody big, something that will whet his desire for contest and at the same time give him self-control and self-command.

Few teachers may feel qualified to handle the subject as they think it should be handled. Fear of making mistakes and thus disqualifying one's self in the estimation of pupils is often the

real reason for teachers not attempting new things. To all such we would say that the demand for encyclopedic respect is no longer made by the best teachers. No teacher can live up to it in the present day. The average American is fair minded, none more so than Young America; therefore, let every teacher take up any new work he pleases on the same basis with the pupils and all learn together. Only this is demanded, that the teacher keep far enough ahead in the work to command respect as a leader.

Some teachers may feel a hesitancy in handling live stock before pupils where both sexes are taught together. The objection is born of false modesty. A manly or womanly bearing on the part of the teacher will forestall vulgarity on the part of the pupils. No lesson is more needful to teach than that of clean mindedness; no better way to teach it than by example.

It is hoped that every rural teacher who receives this bulletin will find a way to use all or part of its suggestions. Correspondence is invited on any point not understood.

COURSES OF STUDY

SCHOOL OF AGRICULTURE

State Normal, Third District

CAPE GIRARDEAU, MO.

The State Normal School at Cape Girardeau, Missouri, occupying as it does a position of isolation from other large schools, in order to meet the needs of its constituency, has deemed it expedient to establish a School of Agriculture in connection with its regular normal work. The school has for its purpose the one object of improving rural conditions in Southeast Missouri. To accomplish this result four distinct lines of work are offered: First, an Agricultural High School Course of Study; second, a Teachers' Course to prepare teachers to give instruction in agriculture in rural and high schools; third, a Boys' Short Course in practical agriculture for boys who can neither attend high school nor college; fourth, a School for Farmers lasting from ten days to two weeks. The school also undertakes some demonstration work in which the most promising results obtained by experiment stations are tried for adaptability to this section. The school has fifty-four acres of land which is being equipped as rapidly as possible with buildings, orchards, live stock, and machinery.

The Agricultural High School.

The purpose of the Agricultural High School is to furnish a course of instruction for boys who wish to get a high school education which will fit them either for farm life, or to enter an agricultural college. The course of study is arranged as follows:

FIRST YEAR.

Three term studies:
- English grammar
- Algebra
- Biology
- Elementary physics

One term studies:
- Plant culture
- Live stock judging
- Dairying

SECOND YEAR

Three term studies:
- Rhetoric
- General history
- Mechanics and farm machinery
- Elementary chemistry

One term studies:
- Farm crops and grain judging
- Soil fertility
- Animal feeding.

THIRD YEAR

Three term studies:
- American history
- Care of animals
- Elective

Two term studies:
- Plain geometry

One term studies:
- Meteorology
- Fruit and vegetable gardening
- Bookkeeping
- Farm management.

FOURTH YEAR

Work entirely elective, but must be selected on advice from Normal courses and from elective courses in agriculture.

Elective Courses:

Group I—Advanced live stock judging
- Principles of breeding
- Soil physics and chemistry.

Group II—Bacteriology
- Agricultural chemistry
- Entomology.

Group III—Animal physiology
- Plant physiology.

Group IV—Economics
- Commercial geography.

Teachers' Courses.

Courses fitting teachers to give instruction in agriculture are offered as follows:

Rural School Agriculture—A course planned to give teachers a thorough knowledge of the principles underlying the phenomena of farm life; to select subject matter adaptable to rural grades; to work out a complete system of practical problems in agriculture;

and to find methods of correlating agriculture with other subjects. Three terms' work are required.

Elementary Agriculture—A course one term in length, briefer than the above, offered during the spring and summer terms.

High School Agriculture—A course taking up the problems concerned in the introduction and teaching of agriculture in the high school. Offered during the spring and summer of 1911 as a one-term course. Thereafter it will be expanded into one year's work.

Boys' Short Course.

For boys who have finished their rural school work and who, for various reasons, find it impossible to attend school longer, a course of six weeks' work in practical agriculture is given. The course begins January 3, 1911, and continues for six weeks. The character of the work may be outlined as follows:

Bench work applied to the construction of gates, crates, moulds, buildings and bridges. Mechanical drawing applied to building plans and farm plans. Forge work applied to the repair of machinery and the making, use, and care of tools.

The agricultural work proper includes studies in soil fertility and cultivation, crops, corn and grain judging, the feeding of animals, care of animals and prevention of disease, fruit production, and farm economy. Students entering this short course are given a note book in printed form with tables and outlines of work which are to be filled out by the student himself. Note taking is thus made easy and at the close of the course the student has a complete memoranda of all that he has learned, thus making it a handy reference in his practical work at home.

School for Farmers.

Immediately following the six weeks' short course for boys comes the School for Farmers, lasting ten days to two weeks. Specialists in all lines of agriculture are brought to the Normal to give lectures and demonstrations to the farmers who come in from all parts of Southeast Missouri. Souvenir note books with printed tables and outlines of lectures are given out so that each farmer who attends may carry away with him a complete memoranda of the information he has gained.

Growth and Outlook.

The School of Agriculture had its origin as a distinct depart-

ment of the Normal in September, 1909. During the school year of 1909-1910, sixteen students were enrolled in the high school course, and 250 enrolled in the teachers' course. The boys' short course enrolled ten. The School for Farmers enrolls each year from 200 to 300 farmers. On the opening of school, September, 1910, the enrollment for high school agriculture increased to forty-two. As against thirteen who enrolled in the teahers' course at the beginning of last year, thirty were enrolled this year. Indications for future development in this department are therefore very promising. The need for such work to be carried on in this part of the state is also very evident from the interest taken in it by the people from the beginning.

Regular Normal Course.

The second term of the regular Normal Course begins Tuesday, November 29, 1910. Students who desire to enter at this time will find classes to suit their needs.

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